CLAIMS

1. A method to enable the assessment of the growth rate and death rate of a micro-organism within a chosen time period in an environment of interest by introducing into said micro-organism at least two reporter genes, which method is characterised in that

a) said reporter genes code for luminescent and/or fluorescent products and within said time period and environment at least two said products of the following are produced:

i) an essentially stable product produced in a, within the environment of interest, essentially known proportion to the total amount of cells of said micro-organism that are or have been alive within said chosen time period,

ii) a product present in said environment of interest in an essentially known proportion to the amount of cells alive at any moment within said chosen time period, and

iii) an essentially stable product produced in a, within the environment of interest, essentially known proportion to the total amount of cells of said micro-organism that have died within said chosen time period,

and said products can be measured through their luminescence and/or fluorescence;

b) said micro-organism is incubated within the environment of interest and said luminescence and/or fluorescence is detected after said chosen time period, and

c) the growth and death rate of the said micro-organism is assessed based on at least two of the following:

i) the known proportion of luminescence or fluorescence to the amount of cells alive after any said chosen time period,

ii) the known proportion of luminescence or fluorescence to the total amount of cells that are or have been alive within any said chosen time period, and

iii) the known proportion of luminescence or fluorescence to the total amount of cells that have died within any said chosen time period.

2. The method according to claim 1 characterised in that said micro-organism is a gram negative bacteria, e.g. *Escherichia coli*.

3. The method according to claim 1 characterised in that

a) one reporter gene coding for a luminescent product is luciferase, which is used for the determination of amount of cells alive at any moment within said chosen time period, and

b) another reporter gene coding for a fluorescent product is green fluorescent protein (GFP), which is used for the determination of total amount of cells of said micro-organism that are or have been alive within said chosen time period.

4. The method according to claim 1 characterised in that said reporter genes are introduced into said micro-organism in a plasmid.

5. The method according to claim 3 characterised in that said plasmid is pGFP+luc* (SEQ ID NO: 1).

6. The method according to claim 2 characterised in that

a) one reporter gene coding for a luminescent product is luciferase, which is used for the determination of amount of cells alive at any moment within said chosen time period, and

b) another reporter gene coding for a fluorescent product is green fluorescent protein (GFP), which is used for the determination of total amount of cells of said micro-organism that are or have been alive within said chosen time period.

7. The method according to claim 2 characterised in that said reporter genes are introduced into said micro-organism in a plasmid.

8. The method according to claim 4 characterised in that said plasmid is pGFP+luc* (SEQ ID NO: 1).

9. The method according to claim 6 characterised in that said plasmid is pGFP+luc* (SEQ ID NO: 1).

10. The method according to claim 7 characterised in that said plasmid is pGFP+luc* (SEQ ID NO: 1).